

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Niranjan Damera-Venkata  
Serial No. : 10/698,899  
Filed : October 31, 2003  
Title : EMBEDDING INFORMATION IN IMAGES

Art Unit : 2625  
Examiner : Kau, Steven Y  
Confirmation No.: 3010

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

PETITION UNDER 37 CFR 1.181

Applicants hereby petition the Director to set aside the Examiner's Election Requirement dated October 25, 2007, because: (I) it would not be a serious burden for the Examiner to continue examining the application on the merits without the Election Requirement; (II) the Examiner is not authorized under the Rules to issue the Election Requirement; (III) the Examiner has failed to establish a *prima facie* case for requiring an election of the claims; and (IV) no valid reason exists for dividing among the asserted "species".

The pending claims are reproduced in the attached Claims Appendix.

I. IT WOULD NOT BE A SERIOUS BURDEN FOR THE EXAMINER TO CONTINUE EXAMINING THE APPLICATION ON THE MERITS

MPEP § 803.01 provides that (emphasis added):

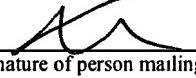
If the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions.

CERTIFICATE OF TRANSMISSION

I hereby certify that this document is being transmitted to the Patent and Trademark Office via electronic filing.

December 21, 2007

Date of Transmission

  
(Signature of person mailing papers)

Edouard Garcia

(Typed or printed name of person mailing papers)

The Examiner already has searched and examined the entire application on the merits before issuing the above-mentioned Election Requirement. The Examiner's Election Requirement therefore is improper at the present stage of prosecution because it would not be a serious burden for the Examiner to continue examining the application on the merits without the Election Requirement.

A summary of the prosecution history of the application is set forth below.

10/31/03      The application was filed with:

claims 1-11 and 29-34 respectively relating to a method and an article for embedding information into an image;

claims 12-20 and 35-38 respectively relating to a method and an article for extracting information from an image; and

claims 21-28 relating to apparatus comprising an encoder for embedding information into an image and a decoder for extracting information from an image.

5/17/07      The Examiner mailed the first Office action on the merits in which the Examiner examined all of the pending claims and issued the following claim rejections:

claims 2, 3, 7, 16, 23, 26, 31, 34, and 37 rejected under 35 U.S.C. § 112, second paragraph, "as being indefinite.";

claims 1-11, 21-27, 29-34, and 35-38 rejected under 35 U.S.C. § 103(a) over Curry (U.S. 5,710,636) in view of Sandford (U.S. 5,778,102) and Lapstun (U.S. 6,512,596);

claims 12-20 and 28 rejected under 35 U.S.C. § 103(a) over Choi (U.S. 2004/0071311) in view of Yu (2003/0174857), Curry (U.S. 5,710,636), and Sandford (U.S. 5,778,102).

8/17/07      Applicants mailed an Amendment in which claims 1-9, 13-18, 21-38 were amended. These amendments, however, preserved the original relationships between the subject matter defined in the claims and the embodiments disclosed in the specification. In particular,

claims 1-11 and 29-34 still respectively relate to a method and an article for embedding information into an image;

claims 12-20 and 35-38 still respectively relate to a method and an article for extracting information from an image; and

claims 21-28 still relate to apparatus comprising an encoder for embedding information into an image and a decoder for extracting information from an image.

10/25/07      The Examiner mailed the election requirement that is the subject of the instant Petition.

The Examiner already has fully and completely searched and examined both of the asserted "species" on the merits in the first Office action dated May 17, 2007. In particular, in the Office action dated October 25, 2007, the Examiner is requiring applicant to elect between the asserted "species" I, which corresponds to the encoder 220 shown in FIG. 3, and the asserted "species" II, which corresponds to the decoder 260 shown in FIG. 4. In the first Office action, however, the Examiner fully and completely searched and examined:

- the original claims 1-11 and 29-34, which relate to the encoder 220;
- the original claims 12-20 and 35-38, which relate to the decoder 260; and
- the original claims 21-28, which relate to both the encoder 220 and the decoder 260.

Although independent claims 1, 21, 29, and 35 have been amended, these amendments did not change the invention defined in these claims to a species that is different from the species originally defined by these claims.

Therefore, it would not be a serious burden for the Examiner to continue examining the application on the merits, regardless of whether the application includes claims that are independent and distinct.

For at least this reason, Applicants request that the Director set aside the Election Requirement dated October 25, 2007.

II. THE EXAMINER IS NOT AUTHORIZED TO ISSUE THE ELECTION REQUIREMENT

The Examiner is not authorized to issue the election requirement date October 17, 2007, because the Rules do not permit the Examiner to issue an election requirement at the current stage of prosecution.

The election requirement is traversed because the Examiner is not authorized to require the proposed election of “species”. In particular, 37 CFR 1.146, which authorizes the Examiner to require an election of species, applies only to “... the first action on an application containing a generic claim to a generic invention (genus) and claims to more than one patentably distinct species embraced thereby....” The instant application was filed with a generic claim to an invention generic to the asserted “species” asserted by the Examiner (e.g., claim 21 relating to both the encoder 220 and the decoder 260; see MPEP § 806.04(e)) and separate sets of claims to each of the asserted “species” (i.e., claims 1-11 and 29-34 relating to the encoder 220, and claims 12-20 and 35-38 relating to the decoder 260). In the first Office action, the Examiner did not “require the applicant in the reply to that action to elect a species of his or her invention to which his or her claim will be restricted,” as provided in 37 CFR § 1.146. Instead, the Examiner fully and completely searched and examined on the merits claims relating to both of the asserted “species”.

Thus, the Examiner is not authorized under 37 CFR § 1.146 to issue the election of species requirement at the present stage of prosecution. The Examiner also is not authorized to issue the election of species requirement under 37 CFR § 1.145 because applicant did not present any claim that is directed to an invention distinct from and independent of the invention previously claimed.

For at least these additional reasons, Applicants request that the Director set aside the Election Requirement dated October 25, 2007.

III. THE EXAMINER HAS FAILED TO ESTABLISH A *PRIMA FACIE* CASE FOR REQUIRING THE PROPOSED ELECTION OF CLAIMS

In the Office action dated October 25, 2007, the Examiner has required an election between species I relating to the encoder 220 shown in FIG. 3 and species II relating to the decoder 260 shown in FIG. 4.

The specification discloses that the asserted "species" I and II are related. For example, the specification discloses a computer system 100 that includes an encoding process 114 that corresponds to the asserted "species" I and a decoding process 116 that corresponds to the asserted "species" II (see, e.g.: page 3, ¶¶17-20; and FIG. 1).

In the case of related inventions, MPEP § 806.05(j) explains that, for related product inventions or related process inventions that are not in a combination/subcombination relationship, the inventions are distinct if (emphasis added):

- (A) the inventions as claimed do not overlap in scope, i.e., are mutually exclusive;
- (B) the inventions as claimed are not obvious variants; and
- (C) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect. See MPEP § 802.01.

The burden is on the examiner to provide an example to support the determination that the inventions are distinct, but the example need not be documented.

The Examiner has given the following explanation in support of the election requirement is that:

The species are independent or distinct because claims to the species recite the mutually exclusive characteristics of such species. In addition, these species are not obvious variants of each other based on the current record.

In this explanation, the Examiner has attempted to address prong (A) of MPEP § 806.05(j) with the statement that “claims to the species recite the mutually exclusive characteristics of such species.”

The Examiner also has attempted to address prong (B) of MPEP § 806.05(j) with the statement that “these species are not obvious variants of each other based on the current record.” This statement, however, is inadequate to make the showing required under prong (B). In particular, MPEP § 808.01 explains that (emphasis added):

The particular reasons relied on by the examiner for holding that the inventions as claimed are either independent or distinct should be concisely stated. A mere statement of conclusion is inadequate.

The reasons upon which the conclusion is based should be given.

With respect to prong (B) of MPEP § 806.05(j), the Examiner’s statement that “...these species are not obvious variants of each other based on the current record” amounts to no more than a statement of conclusion that, under MPEP § 808.01, is inadequate to support the required election among species.

The Examiner has not provided any showing whatsoever that the required prong (C) of MPEP § 806.05(j) is met by his proposed election requirement.

Thus, the Examiner’s election requirement is premised solely on his conclusion that the asserted “species” are mutually exclusive from each other. Under MPEP § 806.05(j), however, mutual exclusivity is insufficient by itself to establish that the species are either independent or distinct. Therefore, the Examiner has not made the showing required under MPEP § 806.05(j) and, consequently, has not established a *prima facie* basis for requiring election between each of the asserted “species” I and II.

For at least this additional reason, Applicants request that the Director set aside the Election Requirement dated October 25, 2007.

#### IV. No Valid Reason Exists for Dividing Among the Related Inventions

In general, if “the classification is the same and the field of search is the same and there is no clear indication of separate future classification and field of search, no reasons exist for dividing among related inventions” (MPEP § 808.02).

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In support of the proposed election of species, the Examiner has stated that:

There is an examination and search burden for these patentable distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g. searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C.112, first paragraph.

In this statement, however, the Examiner has not provided any basis for believing that the classification of the asserted "species" I and II is not the same, nor has the Examiner provided any basis for believing that the field of search of the asserted "species" I and II is not the same. Instead, the Examiner's rationale amounts to no more than a collection of unsupported conclusory statements. Moreover, the fact that the Examiner already has examined the subject matter corresponding to the asserted "species" I and II in the first Office action (see § I above) evidences the fact that the classification of the asserted "species" I and II is the same and the field of search of the asserted "species" I and II is the same. The Examiner also has not provided any clear indication that the classification of the asserted "species" I and II would be different in the future. Thus, the Examiner has not shown that separate examinations are required for the asserted "species" I and II. Accordingly, under MPEP § 808.02 "no reasons exist for dividing among related inventions" and the election requirement should be withdrawn.

For at least this additional reason, Applicants request that the Director set aside the Election Requirement dated October 25, 2007.

## V. CONCLUSION

For at least the reasons explained above, Applicants request that the Director set aside the Examiner's Election Requirement dated October 25, 2007.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

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Respectfully submitted,

Date: December 21, 2007



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Edouard Garcia  
Reg. No. 38,461  
Telephone No.: (650) 631-6591

Please direct all correspondence to:

Hewlett-Packard Company  
Intellectual Property Administration  
Legal Department, M/S 35  
P.O. Box 272400  
Fort Collins, CO 80528-9599

## CLAIMS APPENDIX

The claims pending in Application Serial No. 10/764,423 are reproduced in the following Listing of Claims:

### Listing of Claims:

Claim 1 (previously presented): A method of processing a contone image, the method comprising:

determining a bi-level bitmap of bits from a graylevel value, wherein each of the bits has a respective one of either a first value or a second value;

partitioning the contone image into an array of contone image blocks;

generating a sequence of graphical code word symbols encoding information; and

producing blocks of an output halftone image from ones of the contone image blocks and ones of the graphical code word symbols in accordance with the values of respective ones of the bits of the bi-level bitmap, wherein ones of the output halftone image blocks associated with respective ones of the bits having the first value are derived from respective ones of the contone image blocks and ones of the output halftone image blocks associated with respective ones of the bits having the second value are derived from respective ones of the graphical code word symbols.

Claim 2 (previously presented): The method of claim 1, wherein the determining comprises determining the bitmap based on the graylevel value.

Claim 3 (previously presented): The method of claim 2, wherein the determining comprises producing the bitmap by halftoning a contone patch of the graylevel value.

Claim 4 (previously presented): The method of claim 1, wherein the determining comprises selecting the bitmap from a set of bi-level bitmaps.

Claim 5 (previously presented): The method of claim 1, wherein the producing comprises producing the output halftone image blocks with a dimension that is different from a corresponding dimension of the respective ones of the contone image blocks.

Claim 6 (previously presented): The method of claim 1, wherein the sequence of graphical code word symbols corresponds to a graphical bar code.

Claim 7 (previously presented): The method of claim 1, wherein the producing comprises

halftoning the contone image blocks, and

determining whether to derive ones of the output halftone image blocks from either respective ones of the contone image blocks or respective ones of the graphical code word symbols based on image intensity levels in the respective ones of the contone image blocks.

Claim 8 (previously presented): The method of claim 7, wherein the halftoning comprises error diffusion halftoning the contone image blocks.

Claim 9 (previously presented): The method of claim 1, further comprising diffusing error values determined from the output halftone image blocks.

Claim 10 (original): Apparatus for performing the method of claim 1.

Claim 11 (original): An article comprising memory encoded with a program for causing a processor to perform the method of claim 1.

Claim 12 (original): A method of extracting information embedded in a halftone image, the method comprising:

accessing a bi-level bit map;

partitioning the halftone image into a plurality of image blocks;

using the bitmap to select at least some of the blocks;

identifying a code word sequence in the selected blocks; and  
extracting the information from the code word sequence.

Claim 13 (previously presented): The method of claim 12, wherein the using comprises selecting ones of the image blocks at a rate that is linked to a graylevel of the halftone image.

Claim 14 (previously presented): The method of claim 12, wherein the accessing comprises selecting the bitmap from a table of different bi-level bitmaps.

Claim 15 (previously presented): The method of claim 14, wherein the accessing comprises using a gray level value as an index into the table of the different bi-level bitmaps.

Claim 16 (previously presented): The method of claim 12, wherein the using comprises determining which of the image blocks to select based on image intensity levels of the image blocks.

Claim 17 (previously presented): The method of claim 12, further comprising using unselected ones of the image blocks to construct a version of the halftone image free of the embedded information.

Claim 18 (previously presented): The method of claim 12, wherein the extracting comprises using probabilistic analysis to produce a set of probability parameters, using the set of probability parameters to select a likely sequence of graphical code word symbols encoded into the halftone image, and converting the selected sequence of graphical code word symbols into the extracted information.

Claim 19 (original): Apparatus for performing the method of claim 12.

Claim 20 (original): An article comprising memory encoded with a data for causing a processor to perform the method of claim 12.

Claim 21 (previously presented): Apparatus comprising one of an encoder for encoding a contone image and a decoder for decoding a halftone image;

the encoder being operable to perform operations comprising

determining a first bi-level bitmap of bits from a graylevel value, wherein each of the bits has a respective one of either a first value or a second value,  
partitioning the contone image into an array of contone image blocks,  
generating a first sequence of graphical code word symbols encoding information,  
and

producing blocks of an output halftone image from ones of the contone image blocks and ones of the graphical code word symbols in accordance with the values of respective ones of the bits of the bi-level bitmap, wherein ones of the output halftone image blocks associated with respective ones of the bits having the first value are derived from respective ones of the contone image blocks and ones of the output halftone image blocks associated with respective ones of the bits having the second value are derived from respective ones of the graphical code word symbols; and

the decoder being operable to perform operations comprising

determining a second bi-level bit map of bits from a graylevel value, wherein each of the bits of the second bi-level bit map has a respective one of two different values,

partitioning a version of the output halftone image into a plurality of partitioned halftone image blocks,

selecting ones of the partitioned halftone image blocks in accordance with the values of respective ones of the bits of the second bitmap,

identifying a second sequence of graphical code word symbols from the selected ones of the partitioned halftone image blocks, and

extracting information from the second sequence of graphical code word symbols.

Claim 22 (previously presented): The apparatus of claim 21, wherein the encoder determines the first bi-level bitmap based on the graylevel value characterizing the first bi-level bitmap.

Claim 23 (previously presented): The apparatus of claim 22, wherein the encoder produces the bitmap by halftoning a contone patch of the graylevel value characterizing the first bi-level bitmap.

Claim 24 (previously presented): The apparatus of claim 21, wherein the encoder produces the output halftone image blocks with a dimension that is different from a corresponding dimension of the respective ones of the contone image blocks.

Claim 25 (previously presented): The apparatus of claim 21, wherein the first sequence of graphical code word symbols corresponds to a graphical bar code.

Claim 26 (previously presented): The apparatus of claim 21, wherein in producing blocks of an output halftone image the encoder performs operations comprising  
halftoning the contone image blocks, and

determining whether to derive ones of the output halftone image blocks from either respective ones of the contone image blocks or respective ones of the graphical code word symbols based on image intensity levels in the respective ones of the contone image blocks.

Claim 27 (previously presented): The apparatus of claim 21, wherein the decoder selects ones of the partitioned halftone image blocks at a rate that is linked to a graylevel of the version of the output halftone image.

Claim 28 (previously presented): The apparatus of claim 27, wherein in extracting the information the decoder uses probabilistic analysis to produce a set of probability parameters, uses the set of probability parameters to select a likely sequence of graphical code word symbols

encoded into the output halftone image, and converting the selected sequence of graphical code word symbols into the extracted information.

Claim 29 (previously presented): A computer-readable medium storing computer-readable instructions for causing a computer to perform operations comprising:

determining a bi-level bitmap of bits from a graylevel value, wherein each of the bits has a respective one of either a first value or a second value;

partitioning the contone image into an array of contone image blocks;

generating a sequence of graphical code word symbols encoding information; and

producing blocks of an output halftone image from ones of the contone image blocks and ones of the graphical code word symbols in accordance with the values of respective ones of the bits of the bi-level bitmap, wherein ones of the output halftone image blocks associated with respective ones of the bits having the first value are derived from respective ones of the contone image blocks and ones of the output halftone image blocks associated with respective ones of the bits having the second value are derived from respective ones of the graphical code word symbols.

Claim 30 (previously presented): The computer-readable medium of claim 29, wherein the computer-readable instructions cause the computer to perform operations comprising determining the bitmap based on the graylevel value.

Claim 31 (previously presented): The computer-readable medium of claim 30, wherein the computer-readable instructions cause the computer to perform operations comprising producing the bitmap by halftoning a contone patch of the graylevel value .

Claim 32 (previously presented): The computer-readable medium of claim 29, wherein the computer-readable instructions cause the computer to perform operations comprising producing the output halftone image blocks with a dimension that is different from a corresponding dimension of the respective ones of the contone image blocks .

Claim 33 (previously presented): The computer-readable medium of claim 29, wherein the sequence of graphical code word symbols corresponds to a graphical bar code.

Claim 34 (previously presented): The computer-readable medium of claim 29, wherein the computer-readable instructions cause the computer to perform operations comprising

halftoning the contone image blocks, and

determining whether to derive ones of the output halftone image blocks from either respective ones of the contone image blocks or respective ones of the graphical code word symbols based on image intensity levels in the respective ones of the contone image blocks.

Claim 35 (previously presented): A computer-readable medium storing computer - readable instructions for causing a computer to perform operations comprising:

determining a bi-level bit map of bits from a graylevel value, wherein each of the bits has a respective one of two different values;

partitioning a halftone image into a plurality of partitioned halftone image blocks;

selecting ones of the partitioned halftone image blocks in accordance with the values of respective ones of the bits of the bitmap;

identifying a sequence of graphical code word symbols from the selected ones of the partitioned halftone image blocks; and

extracting information from the sequence of graphical code word symbols.

Claim 36 (previously presented): The computer-readable medium of claim 35, wherein the computer-readable instructions cause the computer to perform operations comprising determining the bitmap based on the graylevel value characterizing the bi-level bitmap.

Claim 37 (previously presented): The computer-readable medium of claim 35, wherein the computer-readable instructions cause the computer to perform operations comprising determining which of the image blocks to select based on image intensity levels of the image blocks.

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Claim 38 (previously presented): The computer-readable medium of claim 35, wherein the computer-readable instructions cause the computer to perform operations comprising using probabilistic analysis to produce a set of probability parameters, using the set of probability parameters to select a likely sequence of graphical code word symbols encoded into the halftone image, and converting the selected sequence of graphical code word symbols into the extracted information.